

A NEW SPECIES OF *SCHILDOLA* (HOMOPTERA: CICADELLIDAE) FROM COSTA RICA¹

Carolina Godoy², M. W. Nielson³

ABSTRACT: The genus *Schildola* was established by Young (1977) and included five species: *S. abrupta*, *S. corrugis*, *S. ductilis*, *S. morio* (Melichar), and *S. opaca*. In this paper we describe one new species from Costa Rica, *Schildola bivirga*. The genus ranges from Costa Rica to Peru.

The genus *Schildola* was described and illustrated by Young (1977), who described four species: *S. abrupta*, *S. corrugis*, *S. ductilis* and *S. opaca*. Young also placed *Microgoniella (Microscita) morio* Melichar in this genus. *S. opaca* is reported from Colombia, Panama and Costa Rica; in the latter it has been collected from 100 to 1700 meters elevation. *S. abrupta* occurs in Ecuador, and *S. corrugis*, *S. ductilis* and *S. morio* are reported from Peru. In this paper we describe one new species, *Schildola bivirga*. Nothing is known about the biology of these leafhoppers.

Genus *Schildola* Young

Schildola Young, 1977. Type-species *Schildola opaca* Young, 1977.

Length male 7.6 - 8.7 mm, female 7.6-10.7 mm. Color dark reddish black to black with white, ivory or orange spots. Hindleg with femoral setal formula 2:1:1, 2:0:0, 2:1:0.

Male genitalia: Pygofer short or moderately produced, apical margin broadly or narrowly convex, setae few to many, their location variable, pygofer processes absent. Plate short, triangular, not extending posteriorly as far as pygofer apex. Style extending posteriorly beyond apex of connective, with preapical lobe. Connective short, narrowly Y-shaped. Aedeagus slightly decurved, variable from short to elongate, without processes. Paraphyses biramous, symmetrical or not.

Female abdominal sternum VII with posterior margin transverse, rounded, emarginate on central part of posterior margin.

MATERIAL AND METHODS

The details of preparations of genital structures of leafhoppers for dissections and study are given by Oman (1949). We have followed his method with some modifications. A system was devised in which the abdomens of 5 leafhoppers were cleared simultaneously. Abdomens were removed, placed in ten percent potassium hydroxide and left to soak overnight at room temperature.

¹ Received May 28, 1999. Accepted August 30, 1999.

² Instituto Nacional de Biodiversidad, Apartado Postal 22-3100 Santo Domingo, Heredia, Costa Rica.

³ Monte L. Bean Museum, Brigham Young University, Provo, UT 84602 USA.

The following day individual abdomens were washed in water before examination and eventual preservation in glycerin in microvials.

Specimens are deposited in the following collections:

CAS: California Academy of Sciences, San Francisco, USA.

INBio: Instituto Nacional de Biodiversidad, Santo Domingo, Heredia, Costa Rica.

NHM: The Natural History Museum, London, UK.

UCR: University of Costa Rica, San Pedro, San José, Costa Rica.

USU: Utah State University, Logan, USA.

Schildola bivirga, NEW SPECIES

Figs 1-8

Length: Male 7.8 - 8.5 mm, female 7.6 mm.

Color generally dark brown to black. Crown, pronotum and scutellum shiny black with a transverse red spot at crown apex. Forewings with a transverse orange spot with paler leg joints.

Head weakly produced, with median length of crown slightly more than one half interocular width and approximately one-third transocular width, anterior margin very broadly rounded in dorsal view, without carina at transition from crown to face, surface convex, glabrous; antennal ledges not protuberant; face slightly flattened in profile, clypeus shiny.

Thorax with pronotal width greater than transocular width of head, weakly rugulose. Forewings with veins elevated and with pits, with supernumerary crossvein forming extra anteapical cell (Fig. 1). Hindlegs with femoral setal formula 2:1:0, first tarsomere with length equal to combined length of two more distal tarsomeres and with setae of plantar surface arranged in two parallel rows.

Male genitalia: Pygofer moderately produced, with dorsal obtuse angle and with apical margin narrowly convex, setae few (Fig. 2). Plates short, triangular, with multiseriata macrosetae (Fig. 3). Style with apex truncate. Connective Y-shaped (Fig. 4). Aedeagus symmetrical, slightly decurved, border serrate ventrally from midlength to apex in lateral view (Fig. 5); in caudoventral view shaft elongate, apex with pair of serrate folds (Fig. 6). Paraphyses symmetrical, with rami directed posteroventrally (Fig. 7).

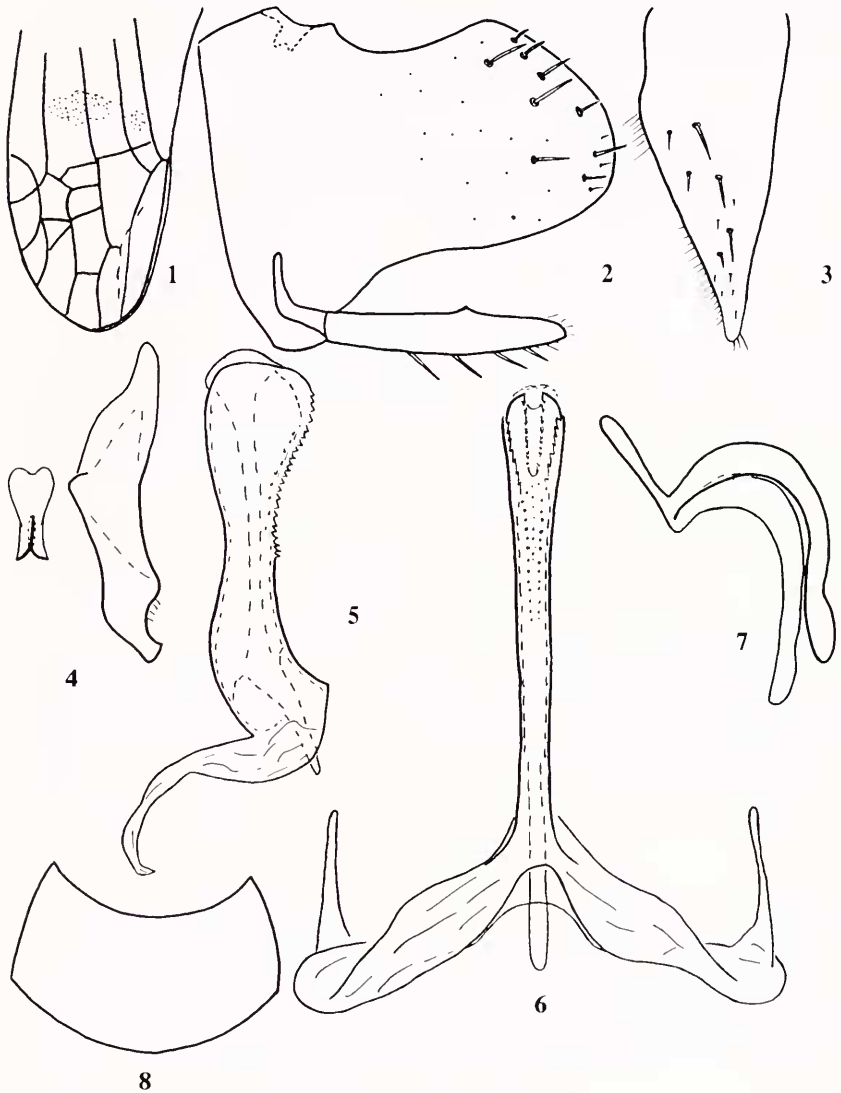
Female abdominal sternum VII rounded, emarginate on central half of posterior margin (Fig. 8).

Holotype male: COSTA RICA, Prov. Cartago, La Cangreja, 1900 m. VII-1991, Col. P. Hanson y C. Godoy (INBio)

Paratypes: 5 ♂♂, same data as holotype; 3 ♂♂, same data except 19-IX 1992, 1 ♂, same data except VIII-IX 1991, 1 ♂, same data except II 1992 (UCR). 1 ♂, Prov. Cartago, R. Grande de Orosi desde Puente R. Dos Amigos hasta la Represa, 1400-1800 m, X 1995, R. Delgado. LN 186600-562000. T. (INBio). 2 ♂♂, R. Grande de Orosi desde Sendero La Pava hasta La Catarata, 1300-1700 m, XI 1995, R. Delgado. LN 191500-560400. T. Malaise (INBio); 3 ♂♂, 4 Km NE Cañon, Genesis II, 2300 m, X-XII 1995, C. Godoy & P. Hanson (1 CAS, 1 NHM, 1 USU); 1♂, same data except VIII 1996 (UCR).

Remarks:

Schildola bivirga is similar to *S. opaca*, but differs by having a black head with a transverse red spot at the apex of the crown and without spots on the pronotum, the presence of one spot on each wing, and by the serrate ventral



Figs. 1-8. *Schildola bivirga*, n. sp.: 1. Anterior forewing apex; 2. Pygofer and plate, lateral view; 3. Plate, ventral view; 4. Style and connective dorsal view; 5. Aedeagus, lateral view; 6. Aedeagus, caudoventral view; 7. Paraphyses; 8. Female abdominal sternum VII.

margin on the aedeagus in lateral view; in *S. opaca*, the ventral margin of the aedeagus is smooth but the apex has tiny protuberances. In Young's (1977) key this species would go to couplet 3, but is black with orange spots. This species has been collected from 1300 m to 2300 meters.

ACKNOWLEDGMENTS

The authors thank Humberto Lezama (UCR) for loans of specimens, and Paul Hanson and Paul Freytag for comments on the manuscript and one anonymous reviewer for suggestions which improved the content of the paper. This research was financed by the Norwegian Agency for Development Cooperation (NORAD) through the project "Contribution to Knowledge and Sustainable Use of Biodiversity in Costa Rica". This research was also made possible thanks to the Cooperative Agreement between the Ministry of Environment and Energy (MINAE) and INBio in order to carry out the National Biodiversity Inventory.

LITERATURE CITED

- Young, D. A.** 1977. Taxonomic study of the Cicadellinae. Part 2. New World Cicadellini and the genus *Cicadella*. North Carolina Agric. Exp. Stn. Tech. Bull. 239. 1135 pp.